

REMARKS/ARGUMENTS

Pending claims 1-5, 12-17, 21-25 and 34-38 stand rejected under 35 U.S.C. §102(e) over U.S. Patent No. 6,321,105 (Jenkins). Applicants respectfully traverse the rejection. As to claim 1, Jenkins nowhere teaches directly detecting regional neural activity from and concurrently with transient magnetic fields induced by the regional neural activity. Instead, Jenkins merely teaches the conventional manner of performing MRI data acquisition and analysis based on a hemodynamic response invoked by neuronal activation. Jenkins, col. 1, lns. 51-54. Thus Jenkins maps neurotransmitter activity based on metabolic response (*id.*, col. 2, lns. 60-66), not from and concurrently with transient magnetic fields induced by regional neural activity. Furthermore, the mapping performed in Jenkins is done based on metabolic response that follows a diagnostic challenge. In other words, relative cerebral blood volume (rCBV) “changes *following* diagnostic challenge...” Jenkins, 3:8-9 (emphasis added). That is, Jenkins teaches “the metabolic response associated with neuronal activation following diagnostic challenge results in a substantial increase in rCBV and hence a decrease in Signal Intensity (SI).” Jenkins, 2:60-66. Here, claim 1 recites a direct detection; in other words, changes in neuronal activity are detected via the magnetic field effects of neuronal firing *per se*, and not through hemodynamic or metabolic changes of hemodynamics which these changes in neuronal activity also trigger, as taught by Jenkins (3:7-10) and contrasted by the Applicants. Specification, p. 3. As such, Jenkins does not map directly from and concurrently with transient magnetic fields induced by regional neural activity. For at least this reason, claim 1 and its dependent claims are patentable.

As to claim 14, nowhere does Jenkins teach directly mapping electromagnetic activity of a subject via magnetic resonance imaging. Certainly, Jenkins nowhere teaches performing such direct mapping without a temporal delay from the electromagnetic activity. That is, as discussed above Jenkins teaches that its monitoring of rCBV changes follows diagnostic challenge and thus after a temporal delay. Jenkins thus indirectly maps neurotransmitter activity based on metabolic responses, not directly from electromagnetic activity. Accordingly, claim 14 and its dependent claims are patentable over Jenkins. For at least similar reasons as to claims 1 and 14, independent claims 23 and 34 and the claims depending therefrom are also patentable. Note also as to claim 23, Jenkins infers neural activity from hemodynamic changes, in contrast to the recited subject matter. Jenkins, 2:60 – 3:11.

Pending claims 26-32 stand rejected under 35 U.S.C. §102(e) over U.S. Patent No. 6,477,399 (Biswal). Applicants respectfully traverse the rejection. As to claim 26, Biswal nowhere teaches a controller that directly detects a magnitude of magnetic resonance signals that represent a neuronal magnetic field. Instead, Biswal is directed to a conventional fMRI system (e.g., Biswal, col. 6, lns. 57-62) in which brain activity is detected via hemodynamic and metabolic responses, rather than magnitude signals representing a neuronal magnetic field that is induced by neural activity. *E.g., id.* at col. 2, lns. 15-25. Accordingly, claims 26-32 are patentable.

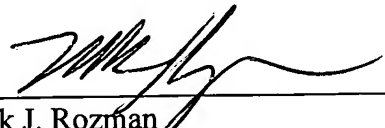
Pending claims 39 and 40 stand rejected under 35 U.S.C. § 102(b) over Kamei, et al. However, claims 39 and 40 are dependent claims and since there is no contention by the Office Action that either of independent claims 23 and 26 (from which claims 39 and 40 depend) are anticipated by Kamei, this rejection cannot stand.

For at least the same reasons as the independent claims from which they depend, the rejection of claims 6-11 and 18-20 under §103(a) over Jenkins in view of various secondary references is also overcome.

In view of these remarks, the application is now in condition for allowance and the Examiner's prompt action in accordance therewith is respectfully requested. The Commissioner is authorized to charge any additional fees or credit any overpayment to Deposit Account No. 20-1504.

Respectfully submitted,

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Mark J. Rozman
Registration No. 42,117
TROP, PRUNER & HU, P.C.
1616 S. Voss Road, Suite 750
Houston, Texas 77057-2631
(512) 418-9944 [Phone]
(713) 468-8883 [Fax]
Customer No.: 21906